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ABSTRACT

Some researchers believe that phonics is the more natural way to teach reading because, instead of requiring the learner to memorize whole words, phonics shows the learner the process by which alphabetic writing is converted into speech. The human baby babbles more than enough phonemes for any language. Before there was an alphabet, humans drew pictures. Some 3,000 years ago the alphabet was invented with a symbol for each phoneme used in spoken language. There is reason to believe that all who eventually learn to read do so by using the phonic process. The whole word or look-say method appeared in the first quarter of the 20th century. What is happening in the brain when the memorizing of words is substituted for the alphabetic process? If children are to learn to read, they need to be shown the process for using the ABC's to match speech they know. Research of neuroscientists indicates that the brain visually processes words rather than recalls them from memory. Educators who fail to start their teaching with phonics are expecting their students to discover for themselves how the alphabet works. (Contains a list of five phonics primers.) (RS)

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ED 370 085

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Inquiry about Learning to Read

Recently some neuroscientists, examining the living brain, are finding that memory is a **process**, rather than a word storage file as previously supposed. Some researchers believe that phonics is the more natural way to teach reading because, instead of requiring the learner to memorize whole words, phonics shows the learner the **process** by which alphabetic writing is converted into speech,

Here's background:

1. Babbling. The human baby babbles many bits of sound or phonemes, more than enough for any language. From hearing and observing its care-takers, the baby imitates the phonemes of its cradle language and drops the rest. By age five the child is a native speaker of whatever language/languages his family is using.

2. Pre-alphabet. Before there was an alphabet, when men wanted to write a message, they drew pictures. Each pictograph and ideograph represented an idea without being related to the sounds of speech. Pictographs were mnemonic devices, useful enough when accompanied by a messenger using spoken language to explain it. [cf. *How the First Letter Was Written* by Rudyard Kipling in the JUST SO STORIES. This of course is a story, but stories often carry a load of truth on their backs.] Ancient ideographs such as cuneiform have been deciphered by scholars without knowing how the language may have sounded. Modern Chinese is written in ideographs and requires the learner, for a start, to commit to memory about 5,000 characters in picture-like form without reference to the sound of the language.

3. The Alphabet.. Some 3,000 years ago the alphabet was invented with a symbol for each sound unit (phoneme) used in spoken language, first the consonants, then the vowels. With the alphabet, a message could travel without an accompanying messenger. For long centuries after this invention, children were taught to read by an alphabetic **process**, matching the letters to the sounds of the speech they already knew. Quintillian described this in ancient Rome. The hornbook, which appeared in England in the 15th century, was a tool for this. So was Noah Webster's Blue Back Speller in 1783 and the McGuffey Primer in 1881.

4. Phonics in the 20th century.. There is reason to believe that all who eventually learn to read do so by using the phonic process. When they come to a new word, good readers attempt to "sound it out". They may mispronounce it, but they will make the attempt and come close. Advertisers use this **process** when they name products such as VEL, DUZ, LUX, LITE, DRANO, SUNOCO, SUNKIST.... Phonics works.

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5. The Whole Word Method. This invention appeared in the first quarter of the twentieth century. John Dewey, Edward Huey, Arthur Gates, and William Gray introduced a new program into U.S. schools, which drilled children to memorize whole words as if they were ideographs. This is called the "look-say" or "whole language" method. At first with a very small word list, this method appeared to be astonishingly successful. The look-say primers were copiously and colorfully illustrated. The stories were brief enough for easy memorization. Yet by third grade children taught by this method were being sent to special "remedial reading" classes. These children could not memorize fast enough the additional words needed for history, geography, and science. And so school books were "dumbed down" to accommodate limited vocabularies. Some academic subjects were dropped in favor of social discussions. SAT scores fell. Colleges, even Harvard, added remedial reading courses for freshmen. How the Alphabet Works was not being taught in university teacher-training courses.

There are economic reasons for why this look-say method has been hard to shed. Meanwhile, our question is this: what is happening in the brain when the memorizing of words is substituted for the alphabetic process?

Exploring the Brain

Two unlikely groups need to meet: those who teach beginners how to read and those who do research on the brain.

In an earlier day, we sometimes pictured the brain as a sort of library, a storehouse where memory filed words and pictures. More recently scientists are finding that what the brain is "remembering" is not a set of flashcards, but is more like a set of skills: how to ride a bicycle? knit? swim? find your way home? How to turn these ink marks into spoken language?

Speech is a natural phenomenon in man. All children learn to speak, simply by being around and hearing us talk. In contrast, learning to read is not a natural phenomenon. If we want a child to learn to read, we have to show him the **process** for using the ABC's to match speech he knows. We need to teach him the alphabetic code and how it works.

When I read aloud, I am converting those marks into speech. Oh, I can read silently much faster than spoken language, true. Nowadays scientists speak of "nanoseconds" of time. How if the brain, in nanoseconds, convert print into speech? How if, each time I read silently, I am using that old ABC invention, very fast, processing alphabetic letters into the phonemes of familiar speech,-- just as in oral reading, only ***much*** faster??

What if the brain is not sorting through a collection of word flashcards, but is reconstructing a string of phonemes? Is the brain processing the printed letters into the sub-vocal sounds of speech--- in nano seconds? Even in silent reading I do add a certain amount of "tone-of-voice" sub-vocally. I do need occasionally to go back and correct my mental intonations of a particular sentence. Am I using phonics even in silent reading?

Here is a report from the Kalamazoo Gazette, April 11, 1991. This was written not for neuroscientists but for the general reading public:

> "Dr. Marcus Raichle of Washington University of St.Louis and his researchers used X-rays to put together an unexpected picture of how the brain remembers.
>
> "Researchers were surprised to see that the memory process actually takes place in three parts of the brain. It has long been known that memory is formed in the hippocampus, an area in the middle of the brain. Another two areas in the brain also play a role, the scientists found.
>
> "The experiment also showed that the brain visually processed the word rather than recalled it from memory."

...the brain visually processed the word rather than recalled it from memory.

Here is the same idea written for an audience of scientists, from an article "Brain and Language" by Antonio R. Damasio and Hanna Damasio [SCIENTIFIC AMERICAN, Special Issue on the Brain, September 1992 p.91]:

> "We believe there are no permanently held 'pictorial' representations of objects or persons as we traditionally thought. Instead the brain holds, in effect, a record of neural activity that takes place in the sensory and motor cortices during interaction with a given object. The records are patterns of synaptic connections that can re-create the separate sets of activities that define an object or event; each record can also stimulate related ones."

If the brain is "**processing** the word rather than recalling it from memory",-- then what are we doing to the children's brains when we try to make them use a whole-word method? What does the child's brain have to do when we set him to recognize a basic word list instead of showing him how to use the alphabet to **process** a word?

If we fail to start our teaching with phonics, are we expecting every child to discover for himself How the Alphabet Works?

"Sound it out!" said Grandma. What did she know about neuroscience that we are just discovering?

Short List

Johnson, George: In the Palaces of Memory, How We Build the Worlds inside our Heads [Alfred Knopf, 1991] [
Ornstein, Robert and Richard F. Thompson: The Amazing Brain Houghton Mifflin, 1984]
Terman, Sibyl and Charles C. Walcutt: Reading; Chaos and Cure [McGraw-Hill, 1958]
Scientific American, Special Issue: Mind and Brain, September 1992, eleven different, interlocking papers.

Sample phonics primers:
Lippincott primers by McCracken and Walcutt, or by Hay-Wingo
Schoolfield and Timberlake: Phonovisual Method
Margaret McEathron: *Teach Your Child to Read*
Elainie Albert: *How the Alphabet Works*
TV video 2 casettes: *You Can Read* (1-800-513-READ)

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Reading with Hornbook and Fescue, 1974, 1986.